

5 METHOD AND APPARATUS FOR MOUNTING FLAT SCREEN
TELEVISION ON VERTICALLY ORIENTED SURFACE

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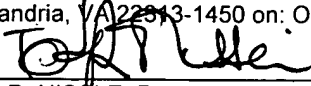
15 John A. Rabenius

of

20 Chandler, Arizona

25 A Citizen of the United States of America

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METHOD AND APPARATUS FOR MOUNTING FLAT SCREEN TELEVISION ON VERTICALLY ORIENTED SURFACE

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This invention pertains to an apparatus and method for mounting an article on a surface.

10 More particularly, the invention pertains to a method and apparatus for mounting a flat screen television on a vertically oriented wall.

Conventional televisions have long utilized, and in many cases still utilize, cathode ray tubes. Such a conventional CRT television has an arcuate screen surface and typically is elevated by setting the television on a stand or shelf. The stand or shelf has a horizontally oriented surface that supports the television.

15 Flat screen televisions are replacing conventional CRT televisions in the marketplace. Flat screen televisions include plasma televisions and other televisions that have a flat, instead of a curved, screen surface. Flat screen televisions often are not as long from front to back as conventional CRT televisions. The advent of flat screen televisions, along with the minimal front-to-back length associated with flat
20 screen televisions, has made it attractive to mount flat screen televisions on a wall suspended above the floor. While mounting a television on a wall seems, at first blush, to be a fairly straightforward matter, there are problems associated with such an

endeavor.

First, flat screen televisions--and in particular plasma televisions--can be quite heavy. A mounting system for a flat screen televisions must therefore be structurally sound to minimize the risk that the television will fall to the floor and injure a child or other individual located beneath the television.

5 Second, mounting a flat screen television such that it is "square" and perfectly oriented with respect to an adjacent ceiling and walls is a difficult proposition. After a flat screen television is mounted on a wall or ceiling in a position suspended above the floor, the television typically will appear to be slightly skewed such that the top of the television is not parallel to the ceiling and the sides of the television are not
10 parallel to side walls. Having to alter a mounting system to adjust the orientation of the television so the television appears properly oriented with respect to the ceiling and walls has the capacity of being a time-consuming proposition.

 Third, once a flat screen television is mounted, it is desirable that the television have the ability, if desired, to be pivoted up and down, to be pivoted from
15 side-to-side, to be moved laterally from side to side in directions parallel to the television screen, or to be moved up and down in directions parallel to the television screen--this to facilitate viewing by individuals from different selected areas in a room.

 Fourth, television mountings systems of the type described herein normally are mounted on studs or other strong structural members in the wall of a
20 building. The construction of a wall can vary from room to room or building to building. For example, the wood or metal studs in a wall may be twelve inches on center, sixteen inches on center, twenty-four inches on center, or may be spaced apart an

unconventional distance. A system used to mount a flat screen television preferably can adapt to at least some variations in construction.

Fifth, many mounting systems undoubtedly can, after being assembled, be adjusted to alter the orientation or position of a flat screen television supported by the mounting system. Sometimes such adjustments are, along with the initial
5 installation of the mounting system, complicated. A mounting system for a flat screen television preferably enables simple, ready adjustment of the system and of the orientation of a television supported by the mounting system.

Sixth, flat screen televisions and other electronic equipment are susceptible to damage when subjected to vibrations. Eliminating or minimizing such
10 vibrations is an important objective of a mounting system.

Seventh, different brands of flat screen televisions utilize mounting screws having varying diameters and thread sizes. A mounting system preferably can be readily used to mount a flat screen television regardless of the dimensions of the mounting screws.

15 Eighth, different brands of flat screen televisions have varying contours on the back of the televisions. One brand of flat screen television may have a back that has a flat contour and that is parallel to the television screen. Another brand of flat screen television may have a curved back or have a back that is canted with respect to the television screen. A mounting system for flat screen televisions should
20 have the ability to be adapted to varying contours on the back of a television.

Accordingly, it would be highly desirable to provide an improved mounting system for flat screen televisions and other articles, which system would address the

problems set forth above.

Therefore, it is a principal object of the invention to provide an improved mounting system for flat screen televisions and other articles.

Another object of the invention is to provide a flat screen television mounting system that is structurally sound; that permits "squaring" of the television with respect to the ceiling and nearby walls of a room; that (once the television is mounted and is "squared" with respect to the ceiling) permits the television to be tilted about horizontal and vertical axes, and, to be moved from side-to-side and up-and-down in directions generally parallel to said horizontal and vertical axes; that is readily adapted to varying wall constructions in buildings; that is readily adjusted after assembly; that compensates for vibrations; that is readily adapted to the various sizes of mounting screws found in different television brands; and, that is readily adaptable to differing surface contours found on the back of various brands of television.

These and other, further and more specific objects and advantages of the invention will be apparent to those skilled in the art from the following detailed description thereof, taken in conjunction with the drawings, in which:

Fig. 1 is a front perspective view of the mounting assembly of the invention illustrating the H-frame of the assembly removably slidably inserted in slots in a pair of associated mounting brackets, the mounting brackets being secured to a wall (not shown) or other vertically oriented surface;

Fig. 2 is a side view illustrating the mounting assembly of Fig. 1 illustrating further construction details thereof;

Fig. 3 is a front view of the mounting assembly of Fig. 1;

Fig. 4 is a rear view illustrating the mounting assembly of Fig. 1;

Fig. 5 is a rear view of a flat screen television illustrating the attachment of a portion of the mounting assembly of Fig. 1 to the back of the television;

Fig. 6 is a rear view illustrating the wall mounting brackets of Fig. 1;

Fig. 7 is a side view further illustrating the wall mounting bracket of Fig.

5 6;

Fig. 8 is a perspective view further illustrating the wall mounting bracket of Fig. 6;

Fig. 9 is a perspective view illustrating one of the mounting pads of Fig. 1;

10 Fig. 10 is a top view further illustrating the mounting pad of Fig. 9;

Fig. 11 is a front view illustrating the mounting pad of Fig. 9;

Fig. 12 is a side view further illustrating the mounting pad of Fig. 9;

Fig. 13 is a top view illustrating the bottom portion of one of the rod connectors of Fig. 1;

15 Fig. 14 is a side view further illustrating the bottom portion of Fig. 13;

Fig. 15 is a top perspective view illustrating the top portion of one of the rod connectors of Fig. 1;

Fig. 16 is a bottom perspective view further illustrating the top portion of one of the rod connectors of Fig. 1;

20 Fig. 17 is a section view of the bottom portion of Fig. 13 taken along section line 17-17 and illustrating further construction details thereof;

Fig. 18 is a section view of the bottom portion of Fig. 13 taken along

section line 18-18 and illustrating further construction details thereof;

Fig. 19 is a perspective view illustrating one of the pucks of Fig. 1;

Fig. 20 is a top view further illustrating the puck of Fig. 19;

Fig. 21 is a side view illustrating the puck of Fig. 20;

Fig. 22 is a section view of the puck of Fig. 20 taken along section line

5 22 and further illustrating construction details thereof;

Fig. 23 is a front view of a flat screen television illustrating a procedure for adjusting the orientation of the television using the mounting assembly of the invention;

Fig. 24 is a perspective view illustrating a rotating multi-apertured washer
10 using in the puck of Fig. 19;

Fig. 25 is a perspective view illustrating a washer utilize intermediate the puck of Fig. 19 and the back of a flat screen television set to absorb vibrations traveling between the television and the mounting assembly of the invention;

Fig. 26 is a perspective view illustrating a cantilever mounting bracket
15 used in one embodiment of the invention; and,

Fig. 27 is a perspective view illustrating a horizontally oriented mounting rod in the mounting assembly of Fig. 1.

Briefly, in accordance with the invention, I provide improvements in combination with a flat screen television. The television includes a front and a back.
20 The improvements mount the television on a vertically oriented wall and include at least one mounting member mounted on the wall and including at least one slot; at least one horizontally oriented structural support member including an intermediate

portion slidably inserted in the slot; at least a pair of vertically oriented spaced apart structural support members connected to the horizontally oriented structural support member; and, a plurality of connector members mounted on the vertically oriented structural support members and connected to the back of the television.

5 In another embodiment of the invention, I provide improvements in combination with a flat screen television. The television includes a front and a back. The improvements mount the television on a vertically oriented wall and include at least one mounting member mounted on the wall; at least one connector member mounted on the mounting member; at least one horizontally oriented support member mounted on the connector member for lateral and rotational movement thereon to
10 permit the position of the television on the wall to be laterally and pivotally adjusted; at least a pair of vertically oriented spaced apart structural support members connected to the horizontally oriented structural support member; and, a plurality of connector members mounted on the vertically oriented structural support members and connected to the back of the television.

15 In a further embodiment of the invention, I provide improvements in combination with a flat screen television. The television includes a front and a back. The improvements mount the television on a vertically oriented wall and include at least one mounting member mounted on the wall; at least one horizontally oriented structural support member including an intermediate portion mounted on the mounting
20 member; at least a pair of vertically oriented spaced apart structural support members connected to the horizontally oriented structural support member; and, a plurality of connector units mounted on the vertically oriented structural support members and

connected to the back of the television, each of the connector units including a vibration absorbing spacer.

In still another embodiment of the invention, I provide improvements In combination with a flat screen television. The television includes a front and a back having a contour. The improvements mount the television on a vertically oriented wall and include at least one mounting member mounted on the wall; at least one
5 horizontally oriented support member mounted on the mounting member; at least a pair of vertically oriented spaced apart structural support members connected to the horizontally oriented structural support member; and, a plurality of connector members. The connector members are pivotally mounted on the vertically oriented structural
10 support members to permit the connector members to be pivoted on the vertically oriented structural support members to register with the contour of the back of the television, and are connected to the back of the television.

In still a further embodiment of the invention, I provide improvements in combination with a flat screen television. The television includes a front and a back
15 having a contour. The improvements mount the television on a vertically oriented wall and include at least one mounting member mounted on the wall; at least one horizontally oriented support member mounted on the mounting member; at least a pair of vertically oriented spaced apart structural support members connected to the horizontally oriented structural support member; and, a plurality of connector members
20 mounted on the vertically oriented structural support members and connected to the back of the television, the orientation of the connector members on the vertically oriented support members being adjustable to alter the location of the television on the

wall.

In yet another embodiment of my invention, I provide an improved method for mounting a flat screen television on a vertically oriented wall. The television includes a front and a back. The improved method comprises the step of providing at least one mounting member to be mounted on the wall; at least one
5 horizontally oriented structural support member including an intermediate portion shaped and dimensioned to be mounted on the mounting member; at least a pair of vertically oriented spaced apart structural support members connected to the horizontally oriented structural support member; and, a plurality of connector members mounted on the vertically oriented structural support members to be connected to the
10 back of the television. The method also includes the steps of mounting the mounting member on the wall; connecting the connector member to the back of the television; and, mounting the horizontally oriented member on the mounting member.

Turning now to the drawings, which depict the presently preferred embodiments of the invention for the purpose of illustrating the practice thereof and not by way of
15 limitation of the scope of the invention and in which like reference characters refer to corresponding elements throughout the several views, Figs. 1 to 4 illustrate a mounting assembly generally indicated by reference character 10. Mounting assembly 10 includes cylindrical horizontally oriented rods or support members 11, and cylindrical vertically oriented rods or support members 13 and 14. If desired, more than one
20 horizontally oriented rod 11 can be utilized to span the distance between and interconnect members 13 and 14. The shape and dimension of members 11, 13, 14 can vary as desired, as can the shape and dimension of other components of the

mounting apparatus described herein, provided the desired function is achieved.

5 Mounting pad or member 15 has a shape and dimension that is equivalent to mounting pad or member 16. Mounting pad 16 is illustrated in Figs. 9 to 12 and includes cylindrical aperture 16A shaped and dimensioned to slidably receive rod 11. Member 16 includes spaced apart fingers 29 and 30. Aperture 28 extends through finger 29 finger 30. Screw 27 is turned into aperture 28 and extends from finger 29 to finger 30 so that screw 27 can be used to squeeze fingers 29, 30 together, or, can be used to loosen fingers 29, 30 to adjust the "grip" of member 16 on rod 11. Since the structure of member 15 is identical to that of member 16, the grip of member 15 on rod 11 can be similarly loosened or tightened.

10 Alternatively, screw 27 (or the equivalent screw found in member 15) can be used to tighten fingers 29, 30 sufficiently to generally hold member 11 in place in pad 16 (or pad 15) but to also permit rod 11 to be rotated in pad 16 (or pad 15) in the directions indicated by arrows A by manually grasping rods 13 and 14 and pulling or pushing them in the directions indicated by arrows J, H and K, I, respectively (see Figs. 1 and 2). The grip of fingers 29 and 30 (or of the equivalent fingers in pad 15) on rod 11 can also be loosened sufficiently to permit pad 16 (or pad 15) to slide along rod 11 in the directions indicated by arrows B and C (Fig. 1).

20 Rod connectors 19 and 20 are identical in shape and dimension. Rod connector 20 is illustrated in Figs. 13 to 18 and includes top portion 20A and bottom portion 20B. Top portion 20A includes cylindrical aperture 80 formed therethrough, includes semi-cylindrical aperture 81A formed therethrough, and includes screw holes 20C formed therethrough. Bottom portion 20B includes semi-cylindrical aperture 81B

formed therethrough and includes screw holes 20D that each are in registration with one of holes 20C. Four screws (not shown) are provided. Each screw is turned into a registered pair of apertures 20C, 20D to fasten together portions 20A and 20B such that aperture 81A and 81B are in registration and receive rod 11. The four screws can be adjustably tightened to securely mount connector 20 (or 19) on rods 11, 13 such
5 that rod 11 can not be rotated in connector 20, or, the screws can be tightened such that rod 11 can be rotated in connector 20. Rod 13 (and 14) can not be rotated in connector 20 because an arcuate notch 13B formed in rod 13 conforms to, interlocks with, and contacts rod 11 via opening 20E formed in the top portion 20A of connector 20. The shape and dimension of rod 14 is equivalent to that of rod 13. However, rods
10 13 and 14 can, if desired, be cylindrical, can not include a plurality of notches 13A and 13B, can not interlock with rod 11, and can rotate in the generally cylindrical aperture collectively formed by semi-cylindrical apertures 81A and 81B.

One end of horizontal cylindrical rod 11 extends into and/or through the generally cylindrical opening formed by semi-cylindrical apertures 81A and 81B in rod
15 connector 20. The other end of rod 11 extends into and/or through an equivalent cylindrical opening in the equivalent rod connector 19.

The intermediate portion of rod 13 extends through cylindrical aperture 80 in rod connector 20. The intermediate portion of rod 14 extends through an equivalent cylindrical aperture in rod connector 19.

20 Connector or puck 31 is illustrated in Figs. 19 to 22 and is equivalent in shape and dimension to the other connectors or pucks 32 to 34. Puck 31 is removably adjustably slidably mounted or loosened and tightened on the upper end of rod 13 with

a mounting screw 36 that passes through aperture 94. The mounting screw (not shown) associated with connector 32 similarly is used to adjustably slidably mount or loosen and tighten puck 32 on the lower end of rod 13. The mountings screws (not shown) associated with connectors 33 and 34 similarly are used to adjustably slidably mount or loosen and tighten pucks 33 and 34 on rod 14. The mounting screw 36 associated with puck 31 (or the mounting screw associated with puck 32) can be loosened to permit puck 31 (or to permit puck 32) to be slid up and down rod 11 in the directions indicated by arrows S and T (Fig. 3), and can be pivoted about rod 11 in the directions indicated by arrows R and Q (Fig. 1). The ability to pivot connector 31 in the directions indicated by arrows Q and R facilitates adapting the position of connector 31 to varying contours on the back of a television 50.

A wheel 39 is illustrated in Fig. 24 and is, as indicated in Figs. 5 and 24, mounted in circular inset or recess 46 of each puck 31 to 34 with a screw 40 for rotation in the directions indicated by arrows. Screw 40 extends through central aperture 80 formed in each puck 31 to 34. Screw 40 maintains wheel 39 in recess 46 but also functions like an axle, permitting a wheel 39 to rotate about screw 40 in the directions indicated by arrows U. A plurality of different sized openings 41, 42 is formed through wheel 39. For example, the diameter of opening 41 is greater than the diameter of opening 42. Opening 41 has the greatest diameter of the openings formed through wheel 39.

An aperture 94 is formed through puck 31 (as well as each of the other identical pucks 31 to 34). The diameter of aperture 94 is equal to or slightly greater than the diameter of opening 41. Wheel 39 is turned or rotated in the directions

indicated by arrow U to move a desired one of the openings 41, 42 on wheel 39 into registration with aperture 35. The diameters of the openings 41, 42 formed through wheel 39 correspond to the diameters of various sized mounting screws 36 found on different brands of flat screen televisions. Accordingly, the different sized openings 41, 42 on wheel 39 permit members 31 to 34 to be utilized in combination with a variety of different sized mounting screws 36 that have a diameter corresponding or similar to the diameter of one of the openings 41, 42 formed in wheel 39. The threaded end of a mounting screw 36 passes through the opening 41, 42 that is in registration with aperture 94, passes completely through aperture 94, passes completely through an opening 38 formed in a spacer 37 (if a spacer is used), and passes into an internally threaded opening formed in the back 51 (Fig. 5) of a flat screen television 50 or other article.

A spacer 37 of some shape and dimension is preferably utilized in combination with each member 31 to 34 (Fig. 2) because the spacer functions to absorb vibrations that can be harmful to a television mounted with the apparatus of the invention. The vibrations can originate in the television itself, but more typically emanate from the building structure in which the television is mounted. In one embodiment of the invention, each spacer 37 is constructed of a relatively hard rubber or other polymer that may have, by way of example and not limitation, a durometer of ninety. The durometer can vary as desired. In another embodiment of the invention, spacer 37 is constructed of a polymer having a lower durometer, say forty, and spacer is also elastic so that the spacer can act like a shock absorber in a vehicle and absorb movements or vibrations before such movements or vibrations are detrimental to the

television.

As noted, when members 13 and 14 are cylindrical rods and do not include notches 13A and 13B, and when connectors 19 and 20 are formed such that aperture 80 is spaced apart from the aperture collectively formed by apertures 81A and 81B (as illustrated in Fig. 16, in the currently preferred embodiment of the invention aperture 80 is not spaced apart from the aperture formed by apertures 81A and 81B, but instead intersects aperture 81A via opening 20E), then members 13 and 14 can be rotated in members 20-22, 19-21, respectively, in the manner indicated by arrows F in Fig. 3. As earlier noted, however, in the current embodiment of the invention, a plurality of arcuate notches 13A and 13B are formed in each rod 13, 14. Each notch 13A, 13B conforms to the outer surface of cylindrical rod 11 and, when a notch 43 to 45 is maintained in contact with the outer cylindrical surface of rod 11, a rod 13, 14 is not rotatable in the directions indicated by arrow F. Each notch 13A, 13B functions to lock its associated rod 13, 14 in engagement with rod 11.

Figs. 6 to 8 illustrate a wall mount 60 that can be utilized with the mounting assembly of Fig. 1. Wall mount 60 is identical in shape and dimension to wall mount 61. The pair of mounting slots 67 in mount 60 is equivalent in shape and dimension to a like pair of mounting slots 65 formed in mount 61. Wall mount 60 includes an aperture 64 that receives a screw 64A (Fig. 1) that turns into a wood or metal stud 53 in the wall of a building structure. Similarly, wall mount 61 includes an aperture 63 that receives a screw 64A that turns into a wood or metal stud 53 in the wall of a building structure. As would be appreciated by those of skill in the art, any desired fasteners or means can be utilized to secure wall mounts 60, 61 or any other

desired mounting mechanism--including the cantilever in Fig. 26--to a vertically oriented wall or other surface in a building structure.

Mount 60 includes, in addition to the pair of upwardly opening spaced apart slots 67, outwardly projecting arcuate surface 90 (Fig. 8). Mount 61 includes, in addition to the pair of upwardly opening spaced apart slots 65, outwardly projecting arcuate surface 91 (Fig.1)

When rod 11 is being lifted and displaced toward studs 53, 54 to position slidably rod 11 in slots 65 and 67, surfaces 90 and 91 serve as guides because when rod 11 contacts and slides over surface 90 and 91, the installer(s) knows the approximate location of rod 11, i.e., he or she knows rod 11 is positioned just above slots 65 and 67. As is illustrated in Fig. 1, rod 11 slidably seats in slots 65 and 67. Further, when rod 11 seats in slots 65 and 67, member 16 is positioned between slots 65 and is positioned against or near the inner back surface 92 of mount 61 (Fig. 3). Surface 92 prevents member 16 from rotating in mount 61. Similarly, when rod 11 seats in slots 65 and 67, member 15 is positioned between slots 67 and is positioned against or near the inner back surface 93 of mount 60. Surface 93 prevents member 15 from rotating in mount 60.

In Fig. 3, the paneling or sheet rock that normally would cover studs 53, 54 is omitted for the sake of clarity.

Fig. 23 illustrates how the orientation of a flat screen television 50 can, after the television is mounted on the assembly of Fig. 1 and rod 11 is seated in slots 65 and 67, be adjusted to "square" the television 50 such that the top edge of the television is, or appears to be, parallel to the ceiling or other surface in a room. As will

be described further below, after rod 11 is seated in slots 65 and 67, screws 36 loosely secure each puck 31 to 34 to the back 52 of a television 50. Assuming the upper left corner of the television as seen in Fig. 3 needs to be moved slightly down, the television 50 is pivoted in the direction of arrow L about the upper right hand puck 31. The television 50 ordinarily can be pivoted through an angle of about two to three
5 degrees because the openings 41 and 42, aperture 35, and/or the opening 96 in each puck 31 to 34 through which a cylindrical rod 13 or 14 extends, are slightly larger than screw 36 or than rod 13, 14, as the case may be. These differences in size, although not great, provide sufficient "play" or "slop" to permit the orientation of the television to be adjusted before mounting screws 36 are used to fully tighten the pucks 31 to 34 in
10 position on rods 13, 14 and against the back 52 of television 50. After the television 50 is pivoted to the desired location indicated by dashed line 50A in Fig. 3, mounting screws 36 are tightened to secure pucks 32 to 34 and rods 13, 14 in fixed position.

In Fig.54, the front-to-back length of a flat screen television or other article is indicated by arrows W that are normal to the television screen. The mounting
15 system of the invention is preferably utilized on flat screen televisions having a front-to-back length that at its greatest dimension is eight inches or less. When the back of a flat screen television is at at least some points not flat, or is flat and not parallel to the flat screen, then the front-to-back length will vary, and will be greatest at some point on the back of the television.

20 Fig. 26 illustrates a cantilever mount that can be used in combination with the mounting assembly of Fig. 1. The cantilever mount is generally indicated by reference character 70 and includes a rectangular plate that is mounted against a

vertically oriented wall by turning screws through apertures 71, 72 into the wall, preferably into wood or metal studs or other strong structural members in the wall.

Arm 73 pivots in the direction of arrows M, N and about hinges 74, 75. Arm 76 pivots in the direction of arrows O, P and about hinge 77. After cantilever mount 70 is secured to a wall, the mounting assembly of Fig. 1 (with the television
5 attached) is mounted on the cantilever mount by sliding rod 11 in slots 65A and 67A in the same manner that rod 11 is slid into slots 65 and 67 in Fig. 1..

In use, a flat screen television or other article is provided. A location for mounting the television is selected on a vertically oriented wall in a building structure. Mounting members 60 and 61 (or cantilever 70 or some other mounting system) is
10 provided. The location in the wall of studs 53 and 54 is determined. The shortest horizontal distance between the center points of the studs is determined. The screw 27 in each mounting pad 15, 16 is loosened (Figs. 1, 3, 9), and members 15 and 16 are slid along rod 11 to positions in which they are a distance apart on center that is equivalent to the shortest horizontal distance between the center points of studs 53
15 and 54. The distance between members 15 and 16 is important because members 15 and 16 must nest in and between slot pairs 65 and 67, respectively, when rod 11 is seated in slots 65 to 68 in the manner illustrated in Figs 1 and 2. Mounting members 60 and 61 are secured to studs 53 and 54, respectively. When members 60 and 61 are secured to studs 53 and 54, an effort is made to insure that slots 65 and
20 67 are in alignment and lie along a common horizontal line or axis. This to insure that rod 11 will be horizontally oriented when rod 11 is subsequently seated in slots 65 and 67.

Four mounting holes (not visible) on the back 51 (Fig. 4) of the television 50 are located. The distance between the top two holes is determined. Member 19 and/or 20 is loosened on cylindrical rod 11 and is slid along rod 11 in a direction parallel to rod 11 such that apertures 94 of pucks 31 and 34 are in registration with the top two mounting holes on the back of the television. Once apertures 94 in pucks 31 and 34 are in registration, member 19 and/or 20 is tightened in position on member 11. If necessary, each puck 31, 34 is loosened on its cylindrical rod 13, 14, respectively, and is slid in the direction of arrows S and T or is pivoted in the direction of arrows R and Q (especially when the back of the television is not flat and parallel to the television screen) to facilitate registration of the aperture 94 in the puck with its associated mounting hole in the back of the television. After each aperture 94 is in alignment with its corresponding internally threaded mounting hole on the back 52 of television 50, washer 39 is turned in the direction of arrow U to align a selected aperture 41 or 42 with aperture 94, and a mounting screw 36 is inserted through an aperture 41 or 42 and 94 and is turned into an internally threaded mounting aperture in the back 52 of television 50 to secure loosely each puck 31 and 34 in position on rod 13 or 14, as the case may be.

Consequently, the mounting screw 36 associated with each puck is turned through an aperture 41, 42 in wheel 39, through aperture 35 (that is in registration with the selected aperture 41, 42), through a spacer 37 (if used), and into one of the internally threaded mounting holes on the back 52 of the television 50 to loosely secure each puck 31 and 34 to the back of the television in the manner illustrated in Fig. 5. In Fig. 5, only pucks 31 to 34 and rods 13 and 14 of the mounting

assembly are, for sake of clarity, illustrated.

The distance between the bottom two mounting holes and the top two mounting holes on the back 51 (Fig. 4) of television 50 is determined . Pucks 32 and 33 are, if necessary, loosened on cylindrical rods 13 and 14 and are slid upwardly and downwardly therealong in directions indicated by arrows G (Fig. 2) until the aperture
5 94 in each puck is in registration with an internally threaded mounting aperture in the back of the television. Once apertures 94 in pucks 32 and 33 are each in registration with one of the bottom mounting apertures on the back of the television, pucks 32, 33 can be loosely tightened in position on rods 13, 14, respectively. If necessary, each puck 32, 33 is pivoted in the direction of arrows R and Q (especially when the back of
10 the television is not flat and parallel to the television screen) to facilitate registration of the aperture 94 in the puck with its associated internally threaded mounting hole in the back of the television. In order to tighten loosely each pucks 32 and 33 in position on its member 13, 14 and in position on the back 52 of television 50, the mounting screw 36 associated with each puck is turned through a selected aperture 41, 42 in wheel 39,
15 through aperture 94, through a spacer 37 (if used), and into the associated internally threaded mounting holes on the back of the television.

The television and attached mounting assembly of Fig. 1 are lifted and member 11 is slid into and seated in slots 65 to 68 of the mounting members 60 and 61 in the manner illustrated in Fig. 2. The television 50 is not, for sake of clarity,
20 shown in Figs. 1 to 4.

The television is examined to determined if it is "square" with key surfaces in the room, i.e., to determine if the top edge, or some portion, of the

television appears parallel to or in alignment with the ceiling, a selected side wall, or other surfaces in the room. The television normally will not be square, and some minor adjustment will have to be undertaken. Such an adjustment was described earlier with reference to Fig. 23, and will not again be described in detail here. Once the television is maneuvered into what appears to be a square orientation, the pucks 31 to 34 are
5 secured in the positions on the back 52 of the television 50 illustrated in Fig. 4. The pucks 31 to 34 are secured by tightening mounting screws 36. In the television 50 illustrated in Fig. 5, the back 52 is parallel to the front 51 of the television 50.

As illustrated in Fig. 3, an electrical junction box 100 associated with the television or with a sound system or other system associated with the television can
10 be installed in a wall adjacent a stud 53. The junction box 100 can also, if desired, be installed on sheet rock or paneling between or adjacent a mounting member 60, 61.

Having set forth my invention and the presently preferred embodiments and uses thereof, I Claim: